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41. A method of mounting a connector to a substrate, comprising:
providing an electrical connector having a contact and a hold down;
providing a substrate having pads and a hole;
inserting said hold down in said hole, wherein said hole has a perimeter
larger than a perimeter than a perimeter of said hold down;
securing said hold down to said substrate, so as to permit said contacts to
center on the pads upon mounting to the substrate, wherein said hold down is adapted to limit
flattening of said contact during a reflow process; and
securing said contact to said pads on said substrate.

REMARKS

Entry of this response and reconsideration and allowance of the above-identified patent application is respectfully requested. Claims 1-6, 8-14, 12-20, and 25-41 were rejected in the Office Action. Claims 6 and 37 have been canceled. Claims 1, 9, 15, 25, 31, 39, 40, and 41 have been amended. Upon entry of this response, claims 1-5, 8-10, 12-20, 25-36, and 38-41 will be pending in the application. No new matter has been added, and no additional prior art searches are required by the amendments.

The specification was objected to for certain informalities. Applicants have amended the specification, where appropriate, to overcome the informalities. Accordingly, these changes are for clarification purposes, and are unrelated to patentability. In particular, applicants have

changed the Title of the application from --Electrical Connector with Strain Relief-- to "Self-Centering Connector with Hold Down." Also, claim 15 has been amended to provide consistent use of the terms "contact" and "pad." Accordingly, the amendment to claim 15 is made for the purpose of clarity, and does not constitute an amendment made for statutory reasons related to patentability.

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The Office Action also suggested that the "[p]arent case paragraph and page 6, lines 17, 29, must be updated when possible." Applicants note that the references to the provisional application and the copending related application (amended in the previous Response to the first Office Action), as well as the reference to the patent application on page 6, lines 17 and 29, reflect the latest status of those applications in the PTO. Finally, applicants have decided to amend the objected-to Abstract at a later date, as necessary, once the final claim language has been accepted by the PTO.

Rejection Under 35 U.S.C. § 102

Claims 1-20, 25-41 stand rejected under 35 U.S.C. § 102 as being anticipated by U.S. Patent No. 5,490,040 to Gaudenzi et al. ("Gaudenzi"). Although not indicated as such in the Office Action, applicants assume that those claims were rejected specifically under 35 U.S.C. § 102 (b) over Gaudenzi. More specifically, the Office Action contends, *inter alia*, that the pin 58 in Gaudenzi "is sized to permit the solder balls to self align on pcb 60." The Office Action

further contends that Gaudenzi discloses the use of pin 58 as a “standoff,” similar to that provided in the present invention.

However, as amended, claim 1 contemplates a hold down that, *inter alia*, is adapted to retain a housing a distance from a surface of a substrate. Gaudenzi, on the other hand, does not disclose such a feature. In fact, Gaudenzi’s pin 58 specifically teaches away from retaining a housing a distance from the substrate, where it says “[t]he solder balls act as a natural stop and *selected pins with built in stops do not need to be specially formed and located to accomplish stand off* between the component package and its connected circuitry.” (Gaudenzi – column 6, lines 21-24).

Therefore, contrary to the present invention, Gaudenzi expressly teaches away from providing a hold down that, *inter alia*, retains the housing a distance away from the substrate. Support for the amendments to the present application can be found in the present specification as follows: “[d]ifferently than posts 523, post 525 has a shoulder 526 that cannot enter plated through hole 528. Shoulder 526 keeps connector 500 from substrate 527 when solder balls 521 liquefy to prevent bridging. In other words, a suitable post 525 acts as a standoff and prevents solder balls 521 from being flattened by the weight of the connector 500” (page 11, line 30 to page 12, line 4).

Accordingly, applicants respectfully request that the rejection of claims 1-5, 8-10, 12-20, 25-36, and 38-41 under 35 U.S.C. § 102(b) over Gaudenzi be removed.

Rejections Under 35 U.S.C. § 103 (a)

Claims 25-30 stand rejected under 35 U.S.C. § 103 (a) as being unpatentable over U.S. Patent No. 5,772,451 to Dozier II, et al. (“Dozier) in view of U.S. Patent No. 4,878,611 to LoVasco et al. (“LoVasco”). Also, claims 1-20 and 25-41 stand rejected under 35 U.S.C. § 103 (a) as being unpatentable over Dozier in view of U.S. Patent No. 5,214,308 to Nishiguchi (“Nishiguchi”). Also, claims 1-20 and 25-41 stand rejected under 35 U.S.C. § 103 (a) as being unpatentable over Dozier in view of Gaudenzi and LoVasco.

None of the above references, alone or in combination, teach or suggest providing a housing having a hold down that is adapted to permit a surface mount contact to center on a substrate pad, while also retaining a housing a distance from the surface of the substrate. Therefore, for the reasons stated above with respect to the rejection under 35 U.S.C. § 102 (b) over Gaudenzi, Applicants respectfully request withdraw of the rejection of claims 1-5, 8-10, 12-20, 25-36, and 38-41 under 35 U.S.C. § 103 (b).

CONCLUSION

In view of the foregoing, Applicants respectfully submit that the present application is in condition for allowance. Reconsideration of the application and an early Notice of Allowance are respectfully requested. In the event that the Examiner cannot allow the present application for any reason, the Examiner is encouraged to contact the undersigned attorney, Vincent J. Roccia at (215) 564-8946, to discuss resolution of any remaining issues.

Respectfully submitted,

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Marked up versions of claims 1, 9, 15, 25, 31, 39, 40, 41, which are amended herein, showing all of the changes relative to the previous version of each.

1. (Twice Amended) An electrical connector, mountable to a substrate and comprising:

a housing;

a surface mount contact secured to said housing and adapted to surface mount to a pad on the substrate; and

a non-surface mount hold down secured to said housing and adapted to mount to a hole in the substrate so as to permit said surface mount contact to center on said pad upon mounting to the substrate[.], wherein said non-surface mount hold down is adapted to retain said housing a distance from a surface of the substrate.

9. (Twice Amended) A ball grid array connector mountable to a substrate, comprising:

a housing;

a plurality of contacts within said housing;

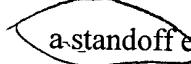
a plurality of fusible elements secured to said contacts for mounting to pads on the substrate; and

a hold down adapted to enter the substrate so as to permit said fusible elements to center on the pads upon mounting to the substrate, wherein said hold down is secured to said housing[.], and wherein said hold down is adapted to limit flattening of said fusible elements during a reflow process.

15. (Twice Amended) A method of mounting an electrical connector to a substrate, comprising:

providing an electrical connector having a contact and a hold down;
providing a substrate having [pads] a pad;
securing said contact to said [pads] pad on said substrate;
placing said hold down into said substrate so as to permit said [contacts]
contact to center on [the] [pads] said pad upon mounting to the substrate; and
securing said hold down to said substrate[.], wherein said hold down is
adapted to limit flattening of said contact during a reflow process.

25. (Twice Amended) An electrical connector mountable to a substrate, comprising:

a housing having a mounting end facing the substrate;
a plurality of contacts secured to said housing;
a plurality of fusible elements, each secured to a respective one of said
plurality of contacts; and

a standoff extending a distance from said mounting end of said housing,
[and] wherein said standoff enters the substrate so as to permit said fusible elements to center on
pads upon mounting to the substrate[.], and wherein said standoff is adapted to limit flattening of
said fusible elements during a reflow process.

31. (Twice Amended) In a ball grid array connector mountable to a substrate, wherein the improvement comprises a [hold-down] hold down adapted to enter an opening in the substrate, so as to permit fusible elements on the ball grid array to center on pads on the substrate

upon mounting to the substrate[.], and wherein said hold down is adapted to limit flattening of said fusible elements during a reflow process.

39. (Amended) An electrical connector, mountable to a substrate and comprising

- a housing;
- a surface mount contact secured to said housing and adapted to surface mount to a pad on the substrate; and
- a non-surface mount hold down secured to said housing and adapted to mount to a hole in the substrate so as to allow relative movement between said connector and said substrate during a reflow process[.], wherein said non-surface mount hold down is adapted to limit flattening of said surface mount contact during a reflow process.

40. (Amended) An electrical connector, mountable to a substrate and comprising

- a housing;
- a surface mount contact secured to said housing and adapted to surface mount to a pad on the substrate; and
- a non-surface mount hold down secured to said housing and adapted to mount to a hole in the substrate, wherein said hole has a perimeter larger than a perimeter of said hold down[.], and wherein said non-surface mount hold down is adapted to limit flattening of said surface mount contact during a reflow process.

41. (Amended) A method of mounting a connector to a substrate, comprising:

- providing an electrical connector having a contact and a hold down;
- providing a substrate having pads and a hole;

inserting said hold down in said hole, wherein said hole has a perimeter larger than a perimeter than a perimeter of said hold down;

securing said hold down to said substrate, so as to permit said contacts to center on the pads upon mounting to the substrate, wherein said hold down is adapted to limit flattening of said contact during a reflow process; and

securing said contact to said pads on said substrate.